

STRATHAM WELL SURVEY

A Final Report to
The New Hampshire Estuaries Project

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Stratham Well Survey
Town of Stratham

Summary of Activities
June 30, 2003
NH Estuaries Project Grant

Executive Summary

In partnership with the Stratham Board of Selectmen, Planning Board, and Conservation Commission, the Stratham Water Commission collected and analyzed information on existing wells in Stratham with the intent of determining the approximate daily water demand for the Town. Based on this study, some progress has been made on making community leaders aware of a potential need to protect Stratham's aquifers from future development.

A survey was designed and mailed to Stratham's some 3000 residences and businesses in September 2002. The survey was designed to conform to the NH Department of Environmental Services (NHDES) well data form for consistency with state data. A second mailing together with media releases were sent out in October, 2002.

Data from the surveys was used to develop a model to determine current water usage (normal and peak usage) in Stratham. The model was developed with the help of Aquarion Water Company and FEMP (Federal Energy Management Program) by using their consumption statistic for domestic usage of their residential customers based on types of residential structures. The model also included Aquarion's and FEMP consumption of businesses in Hampton that were similar in Stratham.

The Stratham Water Commission has worked with NHDES throughout the project to ensure the well data complemented and enhanced the NHDES database. The Stratham Water Commission has almost completed identifying the map and parcel numbers of all of the wells that had been in NHDES database.

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Introduction

At Town Meeting in 1996, Stratham residents authorized the establishment of a Water Commission in response to the proposal of the first commercial large volume groundwater withdrawal within the Town. The Stratham Board of Selectmen appointed members to the Commission in the spring of 2002 and charged the Commission with monitoring current water issues and forecasting the future water needs of the community. With no municipal water and sewer system, Stratham's 7,500 residents and numerous commercial and industrial sites rely on wells to supply water. Very little data existed on these existing wells, making it difficult for the Water Commission to forecast how future demand will impact Stratham's aquifers.

With funding from this grant, the Stratham Water Commission, in partnership with the Stratham Board of Selectmen, Planning Board, and Conservation Commission, surveyed all households and businesses in Stratham to gather specific well information with the intent of determining the approximate daily water demand for the Town.

Project Goal and Objectives

Project Goal

- To establish a database of well information in order to be able to forecast water sources and uses for the foreseeable future.

Project Objectives

To produce a final report which will:

- Assign well location data to identified aquifers to determine where the Town might experience water shortages in the future;
- Highlight well data to structures at each location to determine the approximate use of water at that location;
- Determine, approximately, the current daily water demand for the Town;
- Determine which aquifers need immediate protection from further development.

Methods

1. Assign Project Leader and Establish Project Team

George Miller served as the project leader. Project Team members included Anna Kraus, and Jeremy Smith, all of these people are members of the Stratham Water Commission. The team also had help

from Paul Deschaine who is the Stratham Town Administrator.

2. Plan and mail out survey

In September, 2002, the Stratham Water Commission put together a Well Survey Form for the collection of well data (see Appendix A). The final spreadsheet data form was designed to conform to the NHDES well data form for consistency with state data. Addresses for all 2,549 structures in town were compiled and entered into a database. Survey forms were prepared and mailed to all Stratham residents. Survey pick-up boxes were placed at the Stratham Post Office, Town Clerk's office, and the Town Library. Surveys were picked up 11 times during the month. A second mailing was printed and mailed in October, together with newspaper advertisements in the Portsmouth Herald, Exeter Newsletter, and Fosters Daily Democrat, to ensure good a high percentage of survey returns.

The gathering of survey data was completed in November. A total of 602 forms were returned from the two mailings. Together with information from condominiums served by community wells, a total of 1,150 units were accounted for. The surveys were sorted alphabetically, duplicates eliminated, and readied for data input.

3. Manipulation of the Well Survey data

Throughout the project, the Commission worked with NH DES staff to get the data input spreadsheet in a form compatible with their needs. Data that NH DES already had for Stratham from their wells database was incorporated into the survey data.

The Water Commission has worked with NHDES staff to plot the well locations in relation to the parcels in the town without having to physically having to go on the properties. This has been done by overlaying the town property maps on aerial photo maps of the town and setting the wells up in the center of the parcel. NHDES has found that locating the wells in this way will generally put the well within twenty feet of the actual location. One of the Stratham Town Property maps with well locations plotted will be found in Appendix B of this report.

4. Analysis of Well Survey Data

Data from the surveys has been used to develop a model to determine current water usage (normal and peak usage) in Stratham. The model was developed with the help of Aquarion Water Company and the FEMP (Federal Energy Management Program) by using their consumption statistic for domestic usage of their residential and business customers based on types of residential structure and types of businesses. Stratham's count of water usage entities was divided into 58 different usage classifications. Water usage for these different classifications was directly from Aquarion, FEMP, or by combining data from those two sources to apply to the classifications.

This model projects water consumption for Stratham for peak and average usage in five-year

increments. The model currently predicts the growth of water usage over twenty years, taking into assumption a 4% per year population increase. The model, which has been developed for Stratham, can be seen in Appendix C of this report.

Results and Discussion/Conclusion

The results of the survey are a positive indication that at least 602 wells exist in Stratham, but we know there are considerably more. As we know there is water in every residence and business, we concluded we would have to draw on more resources than the survey alone. The Town appraisal was useful in this regard, listing all structures by type.

The primary purposes of the survey were to raise awareness and build a database of information. In these regards the survey has worked admirably. Information has been compiled and examined. At the same time the community has taken the first steps in becoming aware of water as a resource. By being asked where their water comes from, they have become aware that the resource is a finite entity that they have responsible charge of. Even those who did not respond to the survey still were given at least a moment's thought as to where their water comes from. The positive media helped to multiply these effects throughout our community and the surrounding towns.

Recommendations (for future work or management strategies)

The task of compiling an effective and complete database is ongoing. New sources of data must be discovered. Either other records or reports, combined with fieldwork, must be used to flush out the data we have received through the survey process. This new data must be analyzed to determine the validity of what we have accomplished so far.

- New information will enable us to make more accurate determinations of water usage and increasing valuable predictions of future requirements for water resources. Community planners may come to view the product of our commission as a tool in long-range development of our town.

APPENDIX A

APPENDIX B

APPENDIX C